

CLAIMS:

1. An isolated nucleic acid sequence comprising a sequence that encodes a vascular endothelial cell growth factor (VEGF) variant wherein said variant comprises mutations in the Kinase domain region (KDR) and/or the FMS-like Tyrosine Kinase region (FLT-1).
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2. The DNA sequence according to Claim 1 wherein said variant contains mutations in the FLT-1 region comprising amino acids about 60 to 70.
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3. The DNA sequence according to Claim 1 wherein said variant contains mutations in the KDR region comprising amino acids about 78 to 95.
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4. The DNA sequence according to Claim 1 wherein amino acids 63, 64 and 67 are modified and/or amino acids 82, 84 and 86 are modified.
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5. The DNA sequence according to Claim 1 encoding a vascular endothelial cell growth factor variant having the following modifications: D63A, E64A, E67A, and/or R82A, K84A, H86A.
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6. A polypeptide which comprises a vascular endothelial cell growth factor variant containing a modification in the Kinase domain region (KDR) and/or FMS-like Tyrosine-Kinase region (FLT-1) such that the binding characteristic of said region(s) is modified with respect to its respective receptor.
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7. The polypeptide according to Claim 6 wherein said variant contains amino acid changes in the region comprising amino acids 60 to 70.
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8. The polypeptide according to Claim 6 wherein said variant contains amino acid changes in the region comprising amino acids 78 to 95.
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9. The polypeptide according to Claim 6 wherein amino acids 63, 64 and 67 are modified and/or amino acids 82, 84 and 86 are modified.

10. The polypeptide according to Claim 6 having the following modifications: D63A, E64A, E67A, and/or R82A, K84A, H86A.

5 11. A polypeptide according to Claim 6 containing further amino acid modifications that do not otherwise affect the essential biological characteristics.

12. A replicable expression vector capable in a transformant host cell of expressing the DNA sequence of Claim 1.

10 13. Host cells transformed with the vector according to Claim 12.

14. Host cells according to Claim 13 which are Chinese hamster ovary cells.

15. A composition of matter comprising the VEGF variant according to Claim 6 compounded with a pharmaceutically acceptable carrier.

15 16. A method of treatment which comprises administering a composition according to Claim 15.

17. An assay for identifying candidates having agonistic or antagonistic properties with respect to KDR and/or FLT receptor binding, comprising contacting said candidates with a polypeptide according to Claim 6 and measuring the affect said candidate has on the binding characteristics of said polypeptide to said KDR and/or FLT-1 receptors.

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